

# AVERTX

## HD310

SPECTRUM VISION™ WDR  
Indoor/Outdoor HD IP Dome Camera

**User Manual**



HD310 SPECTRUM VISION™ WDR Indoor/Outdoor HD IP Dome Camera  
Operations Manual

Manual Edition 33348AA – March 2015

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The following words and symbols mark special messages throughout this guide:

**WARNING:** Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.

**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

AVERTX

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## IMPORTANT SAFEGUARDS

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1. **Read Instructions**  
Read all of the safety and operating instructions before using the product.
2. **Retain Instructions**  
Save these instructions for future reference.
3. **Attachments / Accessories**  
Do not use attachments or accessories unless recommended by the appliance manufacturer as they may cause hazards, damage product and void warranty.
4. **Installation**  
Do not place or mount this product in or on an unstable or improperly supported location. Improperly installed product may fall, causing serious injury to a child or adult, and damage to the product. Use only with a mounting device recommended by the manufacturer, or sold with the product. To insure proper mounting, follow the manufacturer's instructions and use only mounting accessories recommended by manufacturer.
5. **Power source**  
This product should be operated only from the type of power source indicated on the marking label.

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## Precautions

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### Operating

- Before using, make sure power supply and others are properly connected.
- While operating, if any abnormal condition or malfunction is observed, stop using the camera immediately and then contact your local dealer.

### Handling

- Do not disassemble or tamper with parts inside the camera.
- Do not drop or subject the camera to shock and vibration as this can damage camera.
- Care must be taken when you clean the clear dome cover. Scratches and dust will ruin the image quality of your camera. Do not use strong or abrasive detergents when cleaning the camera body. Use a dry cloth to clean the camera when it is dirty. In case the dirt is hard to remove, use a mild detergent and wipe the camera gently.

### Installation and Storage

- Do not install the camera in areas of extreme temperatures in excess of the allowable range. (14°F ~ 122°F / -10°C ~ 50°C)
- Avoid installing in humid or dusty places. The relative humidity must be below 90%.
- Avoid installing in places where radiation is present.
- Avoid installing in places where there are strong magnetic fields and electric signals.
- Avoid installing in places where the camera would be subject to strong vibrations.
- Never face the camera toward the sun. Do not aim at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise the camera may be smeared and damaged.

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## REGULATION

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste in accordance with Directive 2002/96/EC. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By proper waste handling of this product you ensure that it has no negative consequences for the environment and human health, which could otherwise be caused if this product is thrown into the garbage bin. The recycling of materials will help to conserve natural resources.

For more details information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Compliance is evidenced by written declaration from our suppliers, assuring that any potential trace contamination levels of restricted substances are below the maximum level set by EU Directive 2002/95/EC, or are exempted due to their application.

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## WARNING

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DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE.

DO NOT OPEN THE CABINET.

REFER SERVICING TO QUALIFIED PERSONNEL ONLY. CAUTION



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# INTRODUCTION

## OVERVIEW

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The HD310 Camera is capable of providing real time streaming video with smooth image quality. The HD310 offers quad streaming and can be used in a variety of installations including shops, stores, home, banks, factories and for building surveillance.

With Power over Ethernet (PoE), the need for separate power lines is eliminated and cabling and installation costs can be significantly reduced. The light weight, small size, and large degree of rotation of the camera facilitates quick and simple installation on either the ceiling or walls of structures or vehicles.

## Camera Default Settings

<b>IP Address</b>	192.168.0.250
<b>Username</b>	Admin
<b>Password</b>	1234
<b>Management Port</b>	80
<b>Streaming Port (RTSP)</b>	554

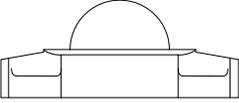
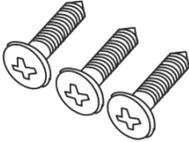
# **ONE: GETTING STARTED**

**Box Contents**  
**Camera Overview**

# BOX CONTENTS

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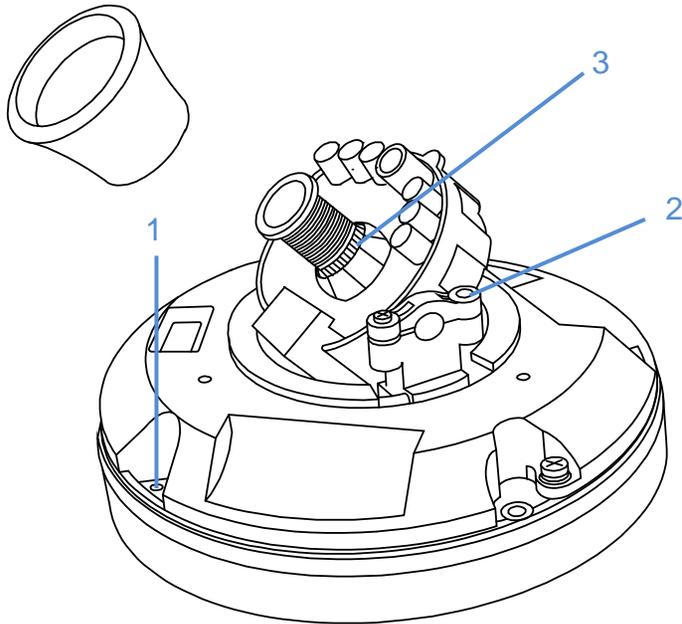
Before proceeding, please check that the box contains the items listed here. If any item is missing or has defects, DO NOT install or operate the product and contact your dealer for assistance.

 <p><b>HD310 Camera</b></p>	 <p><b>Self Tapping Screws</b></p>	 <p><b>Plastic Anchors</b></p>
 <p><b>Rubber Washers</b></p>	 <p><b>Security Torx Tool</b></p>	 <p><b>Documents and Installation CD</b></p>

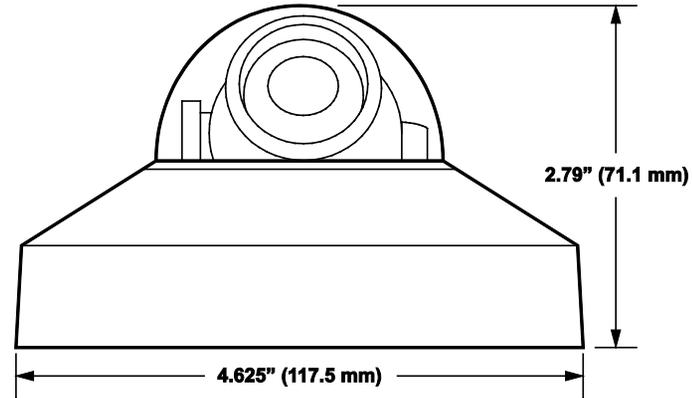
## CAMERA OVERVIEW

Before installing or connecting the dome camera, please refer to this section and complete preparations for dome setup and all switch settings.

### Camera Diagram



### Dimensions



1	Reset Button	Restore camera settings to default settings (paperclip required to press)
2	Tilt Adjust	Use a screwdriver to loosen the screw and adjust the camera to desired tilt. Then re-tighten the screw.
3	Focus Adjust Ring	Twist the ring to adjust the lens focus (needle nose pliers may be required)

## Connections

AvertX HD310 cameras use Power over Ethernet (PoE). The only connection on the camera is the RJ45 Ethernet cable dongle located on the rear of the camera. Connect one end of the Ethernet cable to the dongle, and connect the other end to the recorder, or to a PoE switch.

- Protect the network cable connection from damage by running the cord inside a wall or ceiling, or through conduit.
- If passing the cord through a wall or ceiling, drill a 3/4" hole.
- For outdoor installations, seal any holes in the wall or ceiling with silicone caulk to protect against water intrusion.

For unprotected outdoor connections, this camera features an IP66-rated weather resistant connector. To use this connector:

1. On the included Cat5e camera cable, unscrew the thread lock cap and slide it back a few inches
2. Slide the connector back a few inches
3. Plug the RJ45 Connector into the camera dongle
4. Slide the connector inner boot completely over the RJ45 connector. Be careful that the connector's locking tab is inside of the mating slot
5. Slide the connector over the inner boot and twist to tighten. Only tighten the connector hand tight. Over tightening of the connection can damage the camera dongle
6. Slide the thread lock cap onto the connector and twist to tighten.

AvertX recommends using Category 5 Ethernet cable to connect the camera to your network. For the best transmission quality, the cable length should not exceed 328 feet (100 meters).

Once you have connected the camera, check the status of the network connection by looking at the link indicator and activity indicator LEDs. If the LEDs are not lit check your network connection. The green link LED indicates a network connection and the orange activity LED flashes to indicate network activity.



# **TWO: DEVICE SEARCH**

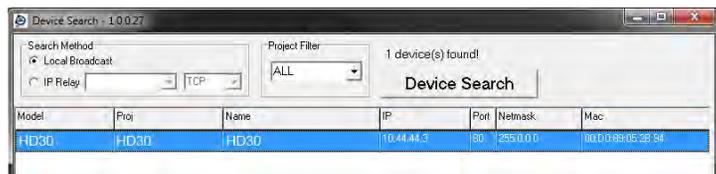
AvertX Device Search

## AVERTX CAMERA FINDER

Use the included Camera Finder software to easily find your network cameras for initial setup. The AvertX Camera Finder software is included on the software CD with all AvertX IP devices. The Camera Finder application is also available to download at [avertx.com](http://avertx.com).

### Finding IP Cameras

1. Open the Software CD on the recorder.
2. Click **Software** on the software disc menu.
3. Click **Camera Finder**.
4. Click **Device Search** on the **Device Search** window.



5. If a **Windows Security Alert** window opens, click **Unblock** to allow the IP utility to access your network.
6. Click **Device Search** again to find all connected IP devices.

**Tip** The default IP address of your IP camera is 192.168.0.250

**Note** If you cannot connect to the camera you may need to change the camera's IP address to match your network settings.

### Accessing the Camera

You can view live video and access the camera configuration by accessing the camera in an internet browser.

1. Right-click the desired network device and select **Browse**.
2. Type the default username and password in the login window to access the video server using your internet browser.

### Administrator/User Privileges

The Administrator account has the authority to configure the IP camera and authorize users' access to the camera. The User accounts have access to the camera with limited authority.

### Default Username and Password

The username and password are case sensitive. It is strongly recommended that the password be changed after the initial setup to prevent unauthorized access.

Username – Admin

Password – 1234

### Changing the IP Address

If you are not directly connecting to an AvertX HDIP recorder, you must manually change the IP address. Change the IP address to a number in the same subnet as your existing network or to the recommended network settings for your network.

1. Right-click the desired network device and then click Network Setup.
2. Select the **Static IP** option.
3. Enter the new IP Address, Gateway, Netmask, and DNS for camera.

# **THREE: SETUP AND CONFIGURATION**

**Installing the Camera**  
**Connecting to the Camera**  
**Camera Settings**

## INSTALLING THE CAMERA

The camera can be installed directly onto the wall or ceiling. Be sure that the structure is strong enough to support the camera.

### Ceiling and Wall Installation

Dome cameras are ideal for installation on a ceiling or soffit location. If you are installing the camera on a wall without a bracket, see “*Consideration for Wall Installations.*”

7. Remove the dome cover following the instructions on the sticker on the base of the camera.
8. Use the included mounting template to pre-drill holes for the mounting screws and, if passing the cable through the ceiling or wall, drill a  $\frac{3}{4}$ " hole.
9. Connect an Ethernet cable to the dongle on the camera.
  - Protect the network cable connection from water damage by running the cord inside a wall or ceiling, or through conduit
  - For outdoor installations, seal any holes in the wall or ceiling with silicone caulk to protect against water intrusion.
10. Affix the base of the camera to the wall with the included self-tapping screws and wall anchors.
11. Adjust the position of your camera.
12. Replace and secure the dome cover.

### Consideration for Wall Installations

When installing a dome camera on a wall without a bracket, you are limited in the direction that you can point the camera lens. Dome cameras should point out perpendicular to the wall surface.

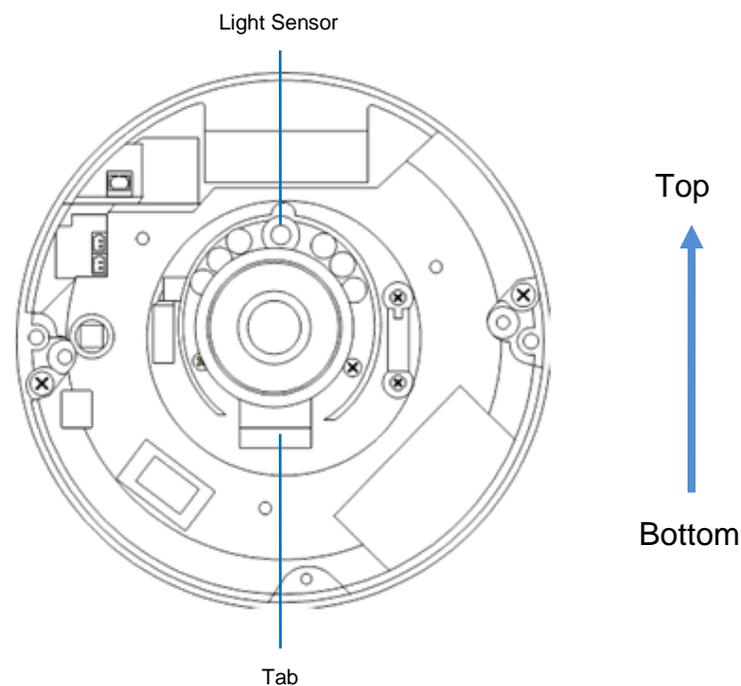
If you choose to turn the camera to point parallel to the wall surface the video image will be sideways.

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**Note** If the video image is upside down after installation, you can flip the image 180°. For instructions to rotate the video, see *Video Rotation* in this manual or find them at [avertx.com/support](http://avertx.com/support).

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### Recommended Vertical Wall Orientation



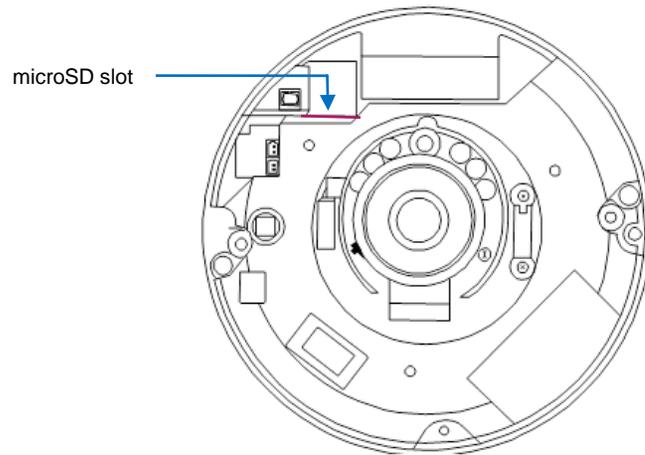
## Resetting the Camera

If it is necessary to reset the camera to the factory default settings, hold down the Reset button (see *Camera Overview*) for 30 seconds. This will return all settings, including network setup, to the factory default. The IP address of the camera will return to 192.168.0.250.

## MicroSD Card

Your camera includes a microSD card slot (up to 128GB), which can be used for emergency video backup. The microSD card is not included. You must remove the cover of the camera to access the microSD card slot.

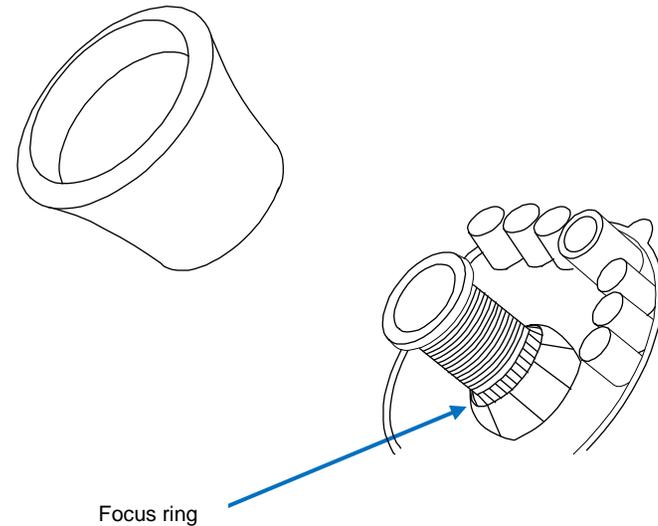
Instructions for recording to a microSD card slot can be found at [avertx.com/support](http://avertx.com/support).



## Focusing the Camera Lens

AvertX cameras are focused at the factory for optimal imaging. However, there are some situations where you may need to adjust the focus. Follow the below instructions to focus the camera:

1. Remove the dome cover from the camera by unscrewing and removing the screws on the outside of the dome.
2. Remove the rubber gasket surrounding the lens.
3. Twist the textured ring at the base of the lens to focus the camera. You may need a pair of needle-nose pliers to grip the ring.
4. Replace the rubber basket
5. Replace the dome cover on the camera and secure screws.



# CONNECTING TO THE CAMERA

## Connecting In a Web Browser

1. Type the IP address of the camera in a web browser.  
or  
Use the included Camera Finder software and locate the camera on the IP Finder list, then double-click the camera to open the Viewer software in your web browser.
2. Log in to the camera with the appropriate User Name and Password.

**Note** The default User name is Admin and the default Password is 1234. The username and password are case sensitive.

## Connecting to a Stream

AvertX IP cameras are optimized for use with AvertX HDIP recorders, but you can also connect to your AvertX IP cameras using third party software like VLC media player (<http://www.videolan.org>).

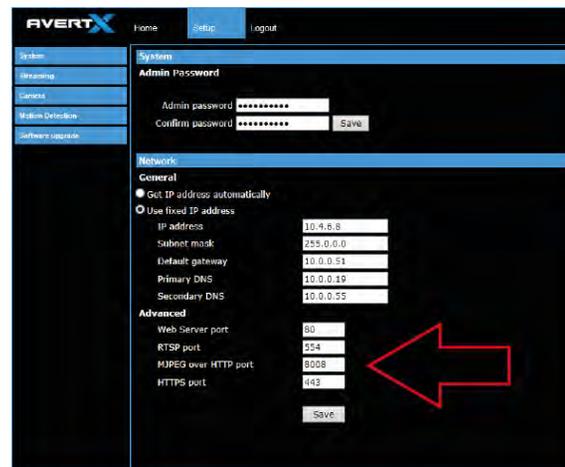
To connect the camera you may need to provide the stream URL. All AvertX IP cameras are capable of delivering two RTSP streams, as well as streaming MJPEG over HTTP. The stream URLs are listed below.

rtsp://<ipaddress>:<rtspport>/jpeg

rtsp://<ipaddress>:<rtspport>/h264

http://<ipaddress>:8008

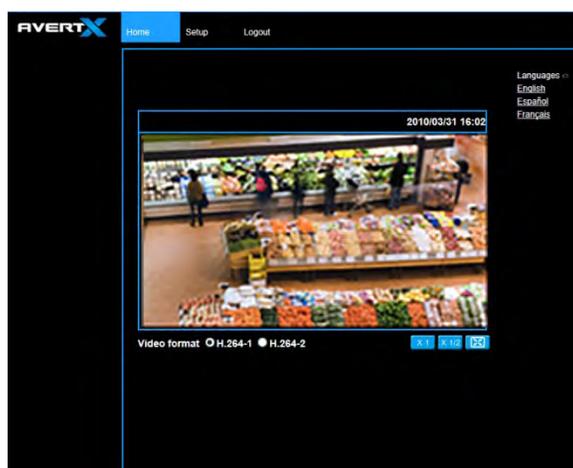
The MJPEG over HTTP stream is identified by a port number. The default port is 8008; this port can be configured in the camera's **System** page (click **Setup**, and then click **System**).



## CAMERA SETTINGS

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You can access the camera setup menu using an internet browser on your computer. The camera viewer software will install automatically the first time you connect to the camera. If your internet browser doesn't install the viewer software, check the security settings or ActiveX controls and plug-in settings. If your internet browser asks for permission to install the plugin, you must allow ActiveX or Quicktime to install to continue the installation.



## Viewer Tabs

**Home** – Monitor live video.

**Setup** – Set the host name, admin password, and network related settings, modify the video resolution, adjust the camera parameters, set Motion Detection options, and view and update the camera software.

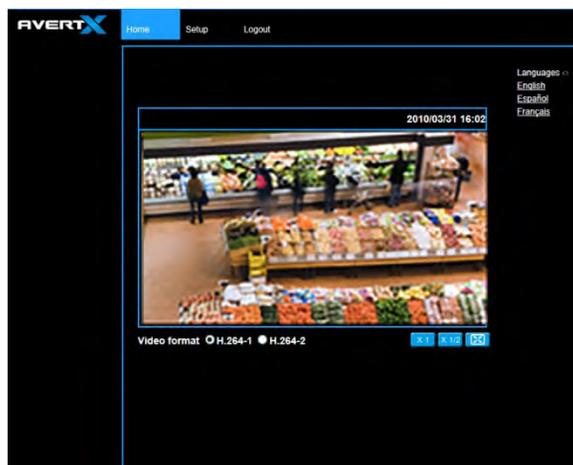
**Logout** – Change user.

---

**Note** For advanced management options, access the camera's admin panel by adding "/admin" after the camera's IP address in your browser's address bar.

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## Home



Select the video stream you want to view, **H.264-1** (stream 1) or **H.264-2** (stream 2).

There are three options for viewing video:

	The default when viewing your camera using the web.
	Use this to make the image smaller. This can save bandwidth if necessary.
	This will show your video at full screen on your monitor. To exit full screen mode, double-click the video.

## Changing the Language

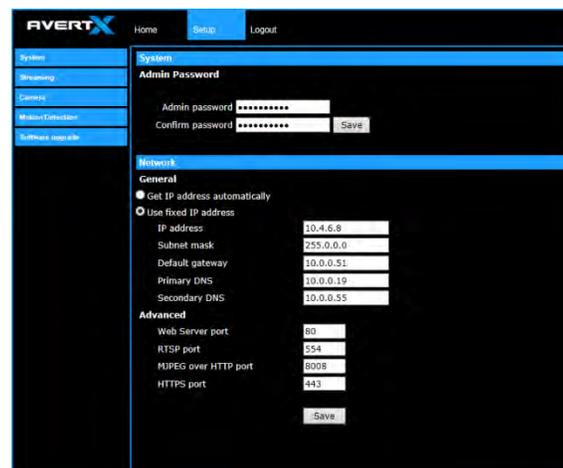
1. Click the **Language** drop down menu
2. Select a language. The browser will refresh, then display the selected language.

## Using Digital Zoom Control

In full screen mode, right-click the video image to activate digital zoom and use the scroll wheel to zoom in/out.

## Setup

### System



### Changing the Admin Password

To change the administrator password, type a new password in the Admin Password box, confirm below, and then click Save.

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**Note** The maximum length of the password is 14 characters. The following characters are valid: A-Z, a-z, 0-9, !#\$%&'-.@^\_~.

---

## Network

General	
<input checked="" type="radio"/> Get IP address automatically	
<input type="radio"/> Use fixed IP address	
IP address	10.4.6.8
Subnet mask	255.0.0.0
Default gateway	10.0.0.51
Primary DNS	10.0.0.19
Secondary DNS	10.0.0.55
Advanced	
Web Server port	80
RTSP port	554
MJPEG over HTTP port	8008
HTTPS port	443
<input type="button" value="Save"/>	

You can choose to use a fixed IP address or a dynamic IP address (assigned by a DHCP server or router) for the camera.

### Get IP address automatically (DHCP)

The camera comes preconfigured with a fixed IP address, selecting **Get IP address automatically** requires a router or DHCP server to assign an IP address to the camera.

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**Note** Every network device has a unique Media Access Control (MAC) address that can be used for identification. The MAC address is located on the bottom of each camera, and on the box label (AvertX IP Finder also displays the MAC address for identification). Record your camera's MAC address for identification in the future.

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### Use fixed IP address

To assign a new static IP address:

1. Select the **Use fixed IP address** option.
2. Type a new IP address in the **IP address** box.
3. Type a new address in the **Default Gateway** box.
4. Click **Save** to confirm the new setting.

When using static IP address to log in to the IP Camera, you can access it either through the AvertX IP Finder software or type the IP address directly in the Address bar of your internet browser.

### General

- **IP address** – The IP Address is necessary for network identification.
- **Subnet mask** – Used to determine if the destination is in the same subnet. The default value is 255.255.255.0.
- **Default gateway** – Used to forward frames to destinations in different subnets or for internet access.
- **Primary DNS** – The primary domain name server that translates hostnames into IP addresses. This is usually the gateway or router address.
- **Secondary DNS** – A secondary domain name server that backups the primary DNS.

### Advanced

- **Web Server port** – Defines the port that Internet Explorer uses to connect over the web and view video. If this port is changed then the new port must be defined when attempting to web connect (ex: if your camera's IP address is 192.168.0.100 and you change the web port to 8001, then you must type http://192.168.0.100:8001 in your browser).
- **RTSP port** – The default RTSP port is 554; setting range: 1024 ~65535.
- **MJPEG over HTTP port** – The default HTTP Port is 8008; setting range: 1024 ~65535.

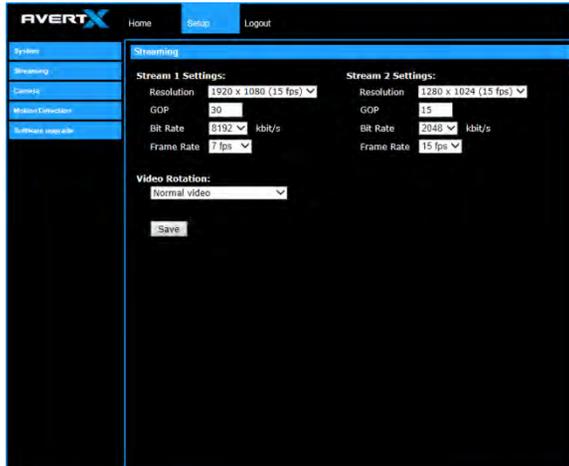
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**Note** The MJPEG over HTTP port must not be the same as the web server port.

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## Streaming

On the Streaming tab, you can configure specific video resolution, video compression mode, and video protocol and audio transmission mode.



## Streaming Settings

Your AvertX IP camera can transmit two streams of video at the same time. One stream can be in high definition for recording, and the other can be a lower resolution used for live display. By using dual streams, you can display more cameras on the monitor of your recorder without taxing the CPU.

**Resolution** – Set the resolution for each stream.

**GOP** – Set the Group of Pictures (GOP) size for each stream. This setting can affect image quality and bandwidth. Please consult with technical support before changing this setting.

**Bit Rate** – Set the data transmission speed for your camera. A lower bit rate will result lower image quality but a smaller file size and more bandwidth availability.

**Frame Rate** – Set the frame rate of each stream. A lower frame rate will result in more bandwidth availability.

## Video Rotation

If your camera is installed on a wall or table top the image may appear to be upside down. Rotate the camera video image using the software to get a right-side-up image.

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**Note** You cannot rotate the video image 90° to get a vertical image. Rotating the image 90° will stretch and distort the video image.

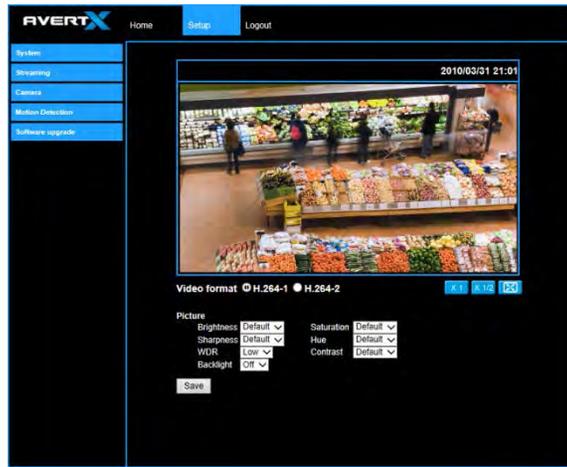
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To rotate the camera video image:

1. Click **Setup**.
2. Click **Streaming**.
3. From the **Video Rotation** list, select the desired rotation.
  - Normal transmits the image as the camera sees it.
  - Flip transmits the image backwards and upside down.
  - Mirror transmits a mirror image.
  - Rotate 90 degree clockwise/counterclockwise
  - 180 degree transmits the image upside down.

## Camera

You can adjust your picture quality on both streams using the Camera section of the Setup tab.



Select the video stream you want to adjust (H.264-1 or H.264-2).  
There are three options for viewing video:

	The default when viewing your camera using the web.
	Use this to make the image smaller. This can save bandwidth if necessary.
	This will show your video at full screen on your monitor. To exit full screen mode, double-click the video.

## Picture

You can adjust these values as necessary for your installation.

- Brightness
- Sharpness
- Saturation
- Hue
- Contrast

## Spectrum Vision™ Wide Dynamic Range (WDR)

**Spectrum Vision™ WDR** available on the HD310 camera

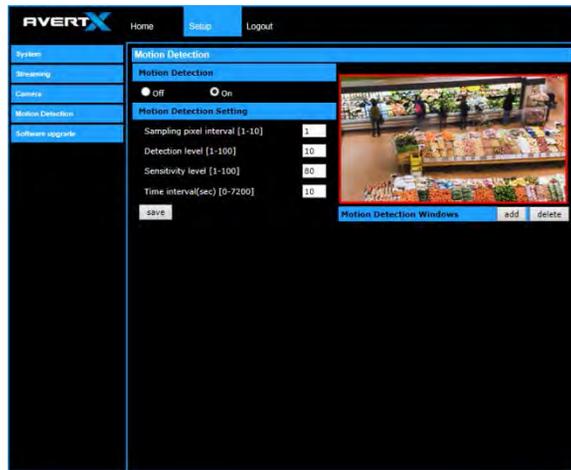
Digital WDR uses the Digital Signal Process (DSP) to brighten darker areas of a scene to provide more detail in dark shade.

## Backlight

If your camera is aimed at a doorway or window, and you need to see detailed footage of people in front of that doorway, the difference between light and shadow can make the people difficult to recognize. Use the Backlight function to adjust for this problem.

## Motion Detection

Motion Detection allows the camera to detect motion and trigger alarms when the motion level in the detected area exceeds the determined sensitivity threshold value.

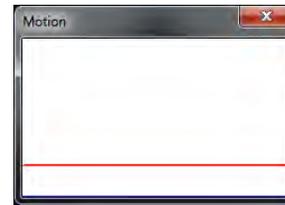


In the Motion Detection page, there is a motion detection window (red box) displayed on the Live View Pane. The Motion Detection window defines the motion detection area. To change the size of the Motion Detection window, drag the edge of the frame to resize.

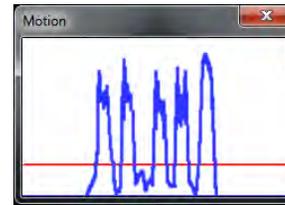
You can add up to 10 motion detection windows.

- Click **add** under the Live View Pane to add a Motion Detection window.
- To delete a Motion Detection window, use the mouse to select the frame and click **delete**.

When motion detection is activated, the **Motion** pop-up window will open.



When motion is detected, the signals will be displayed on the Motion window as shown below.



## Motion Detection

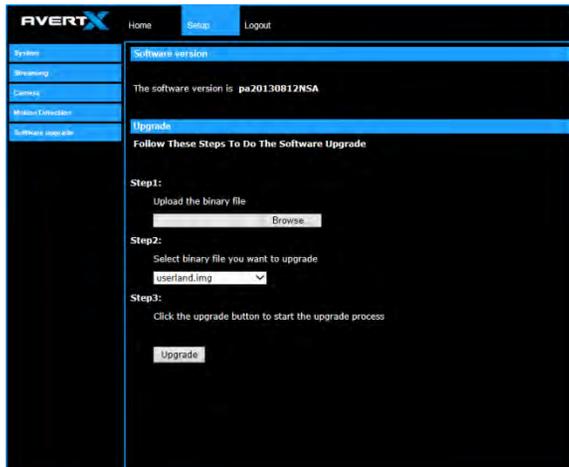
Turn motion detection on or off. The default setting is Off.

## Motion Detection Setting

- **Sampling pixel interval [1-10]** – Default value is 10, which means system will take one sampling pixel for every 10 pixels.
- **Detection level [1-100]** – Default detection level is 10. This item sets the detection level for each sampling pixel; the smaller the value, the more sensitive it is.
- **Sensitivity level [1-100]** – The default sensitivity level is 80, which means if 20% or more sampling pixels are detected as changing, the system will detect motion. The bigger the value, the more sensitive it is. As the sensitivity value is increased, the red horizontal line in the motion indication window will be lowered accordingly.
- **Time interval (sec) [0-7200]** – The default interval is 10. The value is the interval between each detected motion event.

## Software Upgrade

Use the Software Upgrade page to view the current version of camera firmware, and upgrade the firmware if necessary.



## Upgrading the Camera Firmware

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**Note** Make sure the new firmware file is available before starting a software upgrade. Do not change the file name, or the system will not be able to update to the new firmware.

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1. Download the camera firmware file from [avertx.com](http://avertx.com) to a computer and then unzip or extract the file.
2. Access your camera through the web browser.
3. When you have accessed the camera page, click **Setup** at the top of the page.
4. In the setup menu, click the **Software upgrade** tab on the left side of the page.
5. Under **Upgrade** click Browse to locate the firmware file on your computer.
6. Select the file type (ulmage\_userland) from the list under **Step 2**.
7. Click **Upgrade**. The system will check the upgrade file, and then upload the file. The upgrade status bar will display on the page.

## Logout

Your AvertX camera will automatically log you out when you close your browser window. If you want to log in as a different user, you will need to use the logout tab.

## Logging In as a Different User

To log in to your camera as a different user, follow these instructions.

1. Click the **Logout** tab.
2. To log in as a different user, type the appropriate user name and password, and then click **OK**

# **FOUR: SPECIFICATIONS**

## CAMERA SPECIFICATIONS

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<b>Model</b>	<b>HD310IR</b>
<b>Resolution</b>	2MP
<b>IP Rating</b>	IP66
<b>Wide Dynamic Range</b>	Spectrum Vision™ True Wide Dynamic Range
<b>Day / Night</b>	True Day/Night w/IR LEDs
<b>IR LED</b>	6 LEDs
<b>IR Range</b>	15 ft (5 m)
<b>Focal Length</b>	3.6 mm Fixed
<b>FOV</b>	71.8°
<b>Iris Control</b>	F1.8 Fixed
<b>Auto White Balance Range</b>	2700 ~ 8000 K
<b>Auto White Balance Range (ATW)</b>	2450 ~ 10500 K
<b>Auto Gain Control</b>	Yes
<b>Backlight Compensation</b>	Yes
<b>Operating Temperature</b>	18°F ~ 118°F (-8°C ~ 48°C)
<b>Heater</b>	No
<b>Power Consumption</b>	4.1W Max
<b>Input Voltage</b>	PoE Only
<b>Weight</b>	0.7 lbs (317 g)
<b>Dimensions</b>	H: 2.79" (71 mm) W: 4.625" (117.5 mm)

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